

**Final
Site-Specific Field Sampling Plan Attachment
Site Investigation at the Former Motor Pool Area 2000,
Parcel 144(7) and Former Gas Station Area, Parcel 137(7)**

**Fort McClellan
Calhoun County, Alabama**

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List of Acronyms

ADEM	Alabama Department of Environmental Management
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERFA	Community Environmental Response Facilitation Act
CESAS	Corps of Engineers South Atlantic Savannah District
CLP	Contract Laboratory Program
CSEM	conceptual site exposure model
DOD	U.S. Department of Defense
DQO	data quality objective
EBS	environmental baseline survey
EM	electromagnetic
EPA	U.S. Environmental Protection Agency
ESE	Environmental Science and Engineering, Inc.
E-W	east to west
FTMC	Fort McClellan
GPR	ground-penetrating radar
IDW	investigation-derived waste
IT	IT Corporation
msl	mean sea level
N-S	north to south
OWS	oil/water separator
PID	photoionization detector
PSSC	potential site-specific chemical(s)
QA/QC	quality assurance/quality control
QAP	installation-wide quality assurance plan
RCRA	Resource Conservation and Recovery Act
SAP	installation-wide sampling and analysis plan
SFSP	site-specific field sampling plan
SHP	installation-wide safety and health plan
SI	site investigation
SSHHP	site-specific safety and health plan
SVOC	semivolatile organic compound
TAL	target analyte list
TCL	target compound list
USACE	U.S. Army Corps of Engineers
UST	underground storage tank
VOC	volatile organic compound

List of Acronyms *(Continued)*

VSI	visual site inspection
WMP	waste management plan
WP	installation-wide work plan

Executive Summary

In accordance with Contract No. DACA21-96-D-0018, Delivery Order CK005, IT Corporation (IT) will conduct a site investigation (SI) at Fort McClellan (FTMC), Calhoun County, Alabama, at the Former Motor Pool Area 2000, Parcel 144(7) and the Former Gas Station Area, Parcel 137(7), hereafter referred to as the Former Motor Pool Area 2000 to determine the presence or absence of potential site-specific chemicals at this site. This site-specific field sampling plan (SFSP) will provide technical guidance for sampling activities at the Former Motor Pool Area 2000 site.

The Former Motor Pool Area 2000 is located in the central part of the Main Post at the intersection of 10th Avenue and 20th Street. The site formerly included a vehicle storage area and a gasoline station. The gasoline station was comprised of underground storage tanks, an oil/water separator, and a wash rack. The study area covers approximately 3.8 acres. The site is currently used as a go-cart racetrack.

IT will collect seven surface soil samples, seven subsurface soil samples, seven groundwater samples, two surface water samples, two sediment samples and two depositional soil samples. Chemical analyses of the samples collected during the field program will include volatile organic compounds, semivolatile organic compounds, and metals. Additionally, the sediment samples will be analyzed for total organic carbon and grain size. Results from these analyses will be compared with site-specific screening levels specified in the installation-wide work plan (WP) (IT, 1998b), and regulatory agency guidelines.

This SFSP attachment to the installation-wide sampling and analysis plan (SAP) for the Former Motor Pool Area 2000 site will be used in conjunction with the site-specific safety and health plan, the installation-wide WP (IT, 1998b), and the sampling and analysis plan (SAP). The SAP includes the installation-wide safety and health plan, waste management plan, and quality assurance plan. Site-specific hazard analyses are included in the SSHP.

1.0 Project Description

1.1 Introduction

The U.S. Army is conducting studies of the environmental impact of suspected contaminants at Fort McClellan (FTMC) in Calhoun County, Alabama, under the management of the U.S. Army Corps of Engineers (USACE)-Mobile District. The USACE has contracted IT Corporation (IT) to provide environmental services for the site investigation (SI) of the Former Motor Pool Area 2000, Parcel No. 144(7) and Former Gas Station Area, Parcel No. 137(7) under Delivery Order CK005, Contract No. DACA21-96-D-0018.

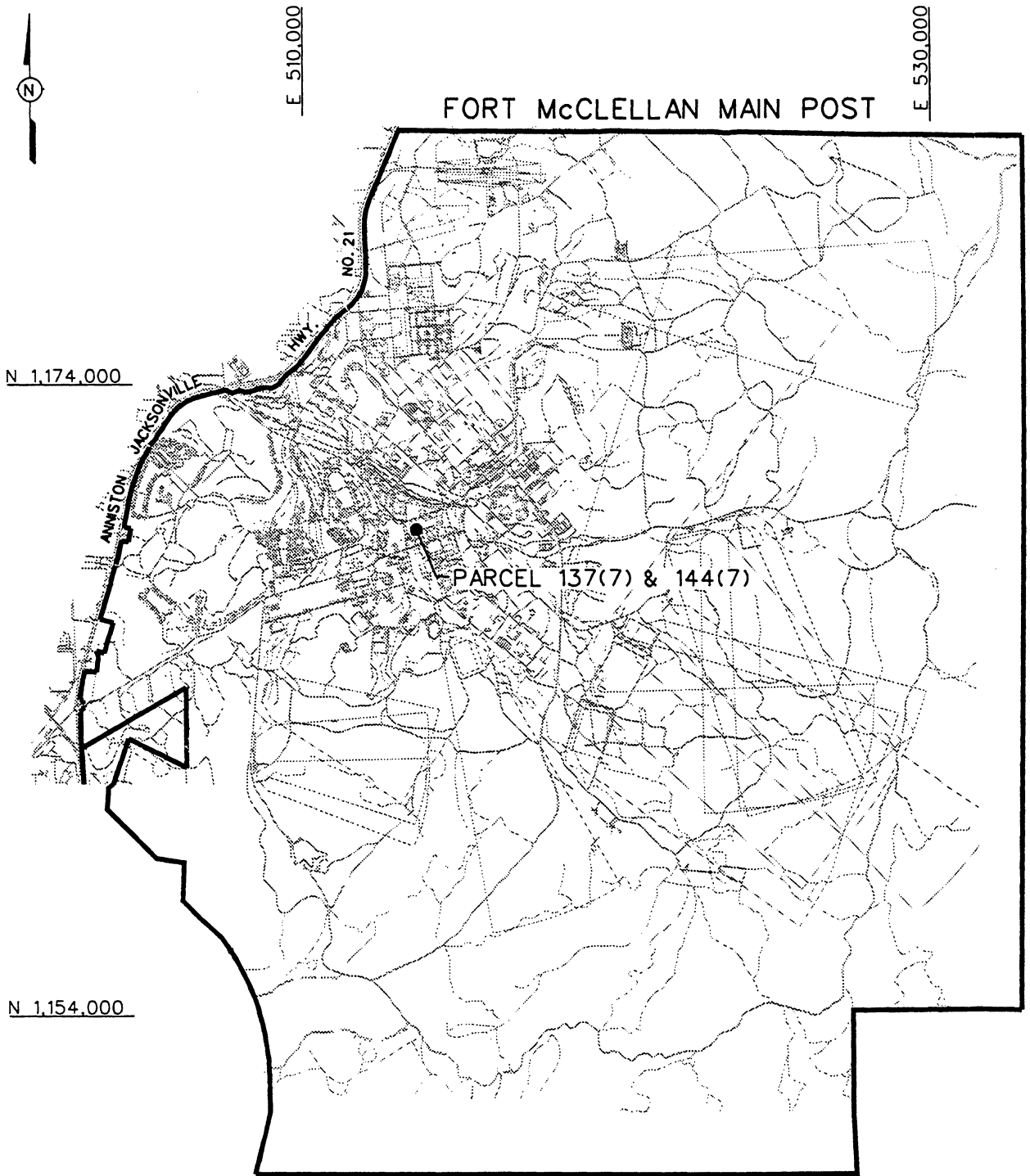
The site-specific field sampling plan (SFSP) attachment to the installation-wide sampling and analysis plan (SAP) (IT, 1998a) for FTMC, Calhoun County, Alabama, has been prepared to provide technical guidance and rationale for sample collection and analysis at the Former Motor Pool Area 2000, Parcel No.144(7) and Former Gas Station Area, Parcel No. 137(7) (Figure 1-1). IT will collect samples at this site as part of a SI effort. The results of this effort will determine whether or not there are contaminants at this site in concentrations high enough to warrant further remedial investigation and/or action. The SFSP is intended to be used in conjunction with the site-specific safety and health plan (SSHP) developed for the Former Motor Pool Area 2000, hereafter referred to as Former Motor Pool Area 2000, and the installation-wide work plan (WP) (IT, 1998b). The SAP includes the installation-wide safety and health plan (SHP), waste management plan, and quality assurance plan (QAP).

1.2 Site Description

FTMC is a U.S. Army installation located in Calhoun County, Alabama, that occupies approximately 45,679 acres. The main post installation is bounded on the south and west by the city of Anniston and on the northwest by the city of Weaver. Pelham Range is 5 miles due west of the Main Post installation and adjoins Anniston Army Depot along its northern boundary. Adjoining the Main Post installation to the east is the Choccolocco Corridor, which provides an access corridor connecting the installation to the Talladega National Forest.

The Former Motor Pool Area 2000 is located in the central part of Main Post at the intersection of 10th Avenue and 20th Street (Figure 1-2). The study area covers approximately 3.8 acres. The entire site is covered with asphalt, with the exception of the western boundary, which has grass. The only structures at the site are Building T-2098, located in the grass area in the western section of the site and a small shed located 60 feet north of Building T-2098. The area around the site consists of housing, recreational facilities, parking lots, and administrative buildings.

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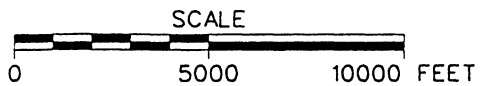
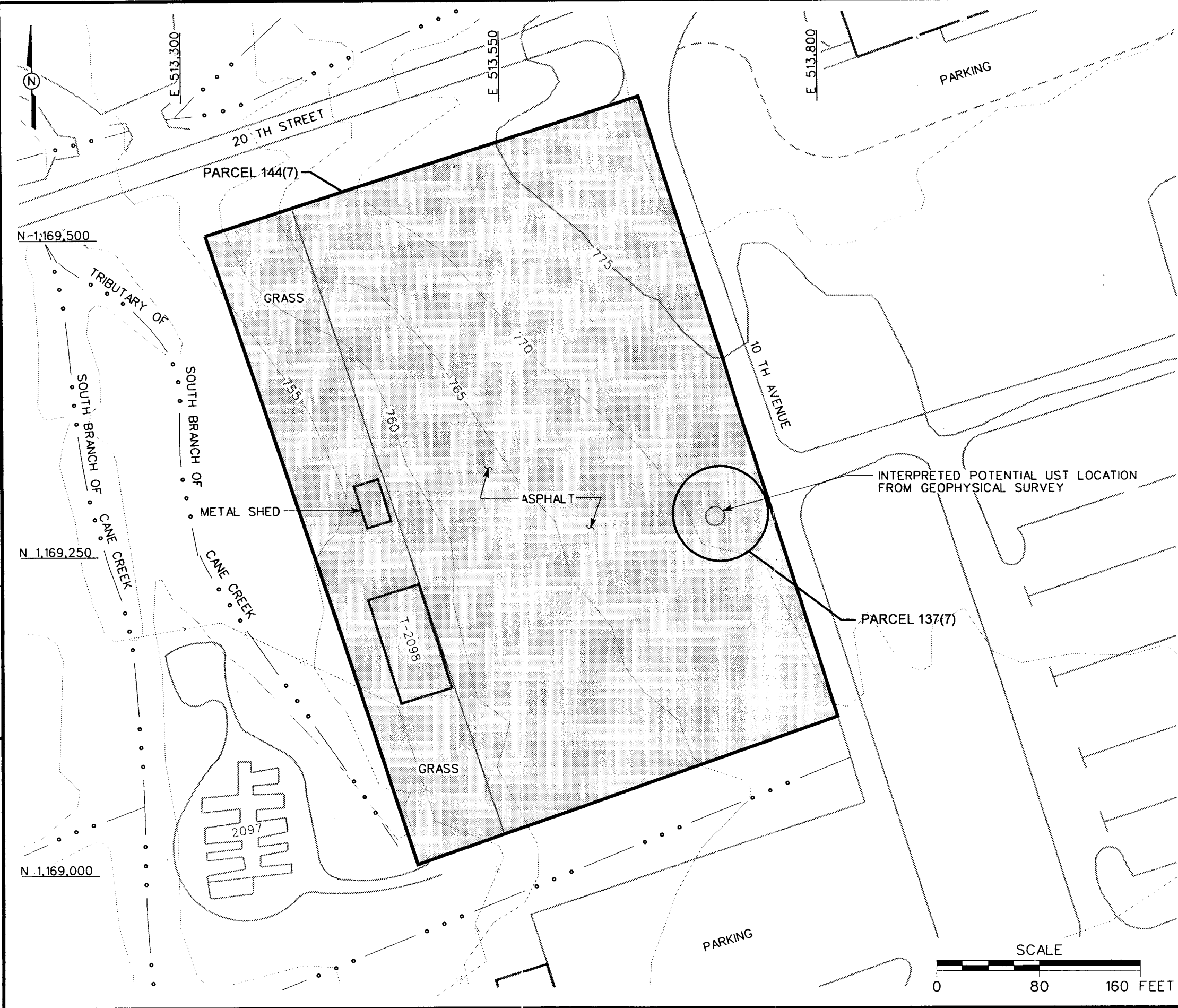
 FORT McCLELLAN BOUNDARY

FIGURE 1-1
PARCEL 137(7) & 144(7)
FORMER MOTOR POOL AREA 2000
SITE LOCATION MAP

U. S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT
FORT McCLELLAN
CALHOUN COUNTY, ALABAMA
Contract No. DACA21-96-D-0018





LEGEND

- UNIMPROVED ROADS AND PARKING
- PAVED ROADS AND PARKING
- BUILDING
- TOPOGRAPHIC CONTOURS
- PARCEL BOUNDARY
- CULVERT WITH HEADWALL
- SURFACE DRAINAGE / CREEK
- FENCE

NOTES:

- POTENTIAL UST LOCATION MARKED IN THE FIELD.
- SITE FEATURES FOUND ON THIS MAP ARE UNCHECKED: FOR ACCURATE SITE INFORMATION TO RECONSTRUCT UST LOCATION, USE GEOPHYSICS SITE MAP.

FIGURE 1-2

SITE MAP

FORMER MOTOR POOL AREA 2000

PARCELS 137(7) AND 144(7)

U. S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT
FORT McCLELLAN
CALHOUN COUNTY, ALABAMA
Contract No. DACA21-96-D-0018

INTERNATIONAL TECHNOLOGY CORPORATION

The site is currently used as a go-cart racetrack. The South Branch of Cane Creek is located directly west of the site. A tributary of the South Branch of Cane Creek is located between the site and the South Branch of Cane Creek. A small drainage creek is located to the south of the site. Shallow groundwater at the site is probably controlled by surface drainage and/or topography. Site elevation ranges from 775 feet mean sea level (msl) in the northeastern section of the site and slopes to 755 feet msl in the west/southwestern section of the site near the South Branch of Cane Creek.

Three soil types are present at the Former Motor Pool Area 2000 site. The most abundant is classified as Anniston and Allen. Anniston and Allen soils encompass the entire site except the western most boundary and northeastern section of the site. Soils of the Anniston and Allen type are well-drained stony loam or stony clay loam over stratified local alluvium with bedrock composed of shale or limestone. This soil type consists of deep, friable, well-drained, medium to strongly acidic soils. Soils are slightly to severely eroded with a clay or silty-clay subsoil. The physical properties of this soil make it suitable for cultivation, but erosion is a risk due to strong slope areas. Depth to bedrock ranges from approximately 2 to 10 feet. Depth to water is approximately 20 feet or greater (U.S. Department of Agriculture, 1961).

Philo and Stendal fine sandy loams encompass the western most boundary of the site, just east of Cane Creek. These soils are 2 to 5.5 feet thick and are well drained to somewhat poorly drained fine sandy loam or fine sandy clay loam. Soils are slightly to strongly acidic and have little structure and are moderately permeable to water and roots. Crops suitable for these soils are corn, small grains, sorghum, soybeans, and many grasses and legumes. Soils of the Philo and Stendal group are developed from alluvium that washed from sandstones and shales. Depth to groundwater is very shallow, typically 1 to 2 feet. Depth to bedrock is approximately 6 feet or greater (U.S Department of Agriculture, 1961).

Montevallo shaly silty loam makes up the remainder of the soil types in the northeastern most section of the site. Montevallo are highly eroded, shaly silty clay soils developed from interbedded shale and fine-grained sandstone which is weakly developed. These soils are formed either by erosional forces, surface runoff or natural reworking processes. Colors are typically yellowish-brown. The high erosion hazard, low capacity for available moisture, and thin root zone make this soil unsuited for cultivation. Depth to groundwater is typically 20 feet or greater. Depth to bedrock is very shallow and typically is approximately 1 to 1.5 feet (U.S. Department of Agriculture, 1961).

1.3 Scope of Work

The scope of work for activities associated with the SI at the Former Motor Pool Area 2000, specified by the statement of work (U.S. Army Corps of Engineers [USACE], 1998), includes the following SI activities to meet the following objectives:

- Confirm or deny the presence of contamination in all media at the site.
- Locate potential sources of contamination at the site.
- Determine the direction of groundwater flow in the vicinity.
- Obtain adequate information to support, as appropriate.
 - Remedial action or recommendation to release the property for transfer or lease
 - No Further Action.

This SFSP has been prepared to provide technical guidance for field activities designed to meet the investigation objectives and include the following tasks:

- Develop the SFSP attachment.
- Develop the SSHP attachment.
- A geophysical survey using magnetics, time and frequency-domain electromagnetics (EM) induction, and ground penetrating radar (GPR) techniques to locate potential underground storage tanks (UST), excavations, trenches, and any other anomalous area present at the site.
- Collect seven surface soil samples, seven subsurface soil samples, seven groundwater samples, two surface water samples, two sediment samples, and two depositional soil samples to determine whether potential site-specific chemicals (PSSC) are present at the Former Motor Pool Area 2000 and provide data useful in any future planned corrective measures and closure activities.

At completion of the field activities and sample analyses, draft and final SI summary reports will be prepared to evaluate the absence or presence of PSSC at this site, and to recommend further actions, if appropriate.

2.0 Summary of Existing Environmental Studies

Environmental Science and Engineering, Inc. (ESE) conducted an environmental baseline survey (EBS) to document current environmental conditions of all FTMC property (ESE, 1998). The study identified sites that, based on available information, have no history of contamination and comply with U.S. Department of Defense (DOD) guidance on fast track cleanup at closing installations. The EBS also provides a baseline picture of FTMC properties by identifying and categorizing the properties by seven criteria:

1. Areas where no storage, release, or disposal (including migration) has occurred.
2. Areas where only storage has occurred.
3. Areas of contamination below action levels.
4. Areas where all necessary remedial actions have been taken.
5. Areas of known contamination with removal and/or remedial action underway.
6. Areas of known contamination where required response actions have not been taken.
7. Areas that are not evaluated or require further evaluation.

The EBS was conducted in accordance with the Community Environmental Response Facilitation Act (CERFA) (CERFA-Public Law 102-426) protocols and DOD policy regarding contamination assessment. Records searches and reviews were performed on all reasonably available documents from FTMC, ADEM, EPA Region IV, and Calhoun County, as well as a database search of Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)-regulated substances, petroleum products, and Resource Conservation and Recovery Act (RCRA)-regulated facilities. Available historic maps and aerial photographs were reviewed to document historic land uses. Personal and telephone interviews of past and present FTMC employees and military personnel were conducted. In addition, visual site inspections (VSI) were conducted to verify conditions of specific property parcels. The Former Motor Pool Area 2000 was identified as a site where further evaluation was needed.

The Motor Pool Area 2000, Parcel 144(7) was constructed in 1941. The site was primarily used for vehicular maintenance and storage. A wash rack and OWS were also reportedly located at the site. The only structures that currently exist at the site are Building T-2098, located in the

grass area in the western boundary of the site and a small metal shed located approximately 60 feet north of Building T-2098. According to the EBS report, 12 former service stations were located at former motor pools after their construction in 1941. The gasoline station buildings were of like construction, consisting of a 9 foot by 12 foot cement foundation with corrugated steel walls. Dispenser islands were located approximately 20 feet in front of the gasoline station building. The original plans called for two 10,000 gallon USTs at each building (ESE, 1998).

Building 2094 was a former gasoline station and was reportedly located at the Former Motor Pool Area 2000 site. Two steel 10,000-gallon USTs used to store gasoline and diesel fuel were reportedly located at the site. In April 1998, a VSI was performed by IT personnel to locate the two USTs, wash rack, and OWS. Evidence of the Building 2094 foundation, USTs, OWS, and wash rack were not observed at the site.

3.0 Site-Specific Data Quality Objectives

3.1 Overview

The data quality objectives (DQO) process is followed to evaluate data requirements and to support the decision-making process associated with the action selection for the Former Motor Pool Area 2000. The DQO process as applied to FTMC is described in more detail in Table 3-1 of this SFSP and in Sections 3.2 and 4.3 of the WP (IT, 1998b). The purpose of this SI is to determine the presence or absence of chemical substances in the site media and to determine future action at the site. A conceptual site exposure model (CSEM) has been developed for this effort. A conceptual model of the site ensures the objectives of the SI are met and a basis for future action at the site will be established. This SFSP, along with the necessary companion documents, has been designed to provide FTMC risk managers with sufficient detail to reach a determination as to the adequacy of the scope of work. The program has also been designed to provide defensible information required to confirm or deny the existence of residual chemical contamination in site media.

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Chapter 4.0 in this SFSP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with Corps of Engineers South Atlantic Savannah (CESAS) Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP). Chemical data will be reported via hard copy data packages by the laboratory using Contract Laboratory Program (CLP)-like forms. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

3.2 Data Users and Available Data

The intended data users and available data related to the SI at the Former Motor Pool Area 2000, presented in Table 3-1, have been used to formulate a site-specific conceptual model. This conceptual model was developed to support the development of this SFSP, which is necessary to meet the objectives of these activities and to establish a basis for future action at the site. The data users for information generated during field activities are primarily the EPA, USACE, ADEM, FTMC, and the USACE supporting contractors. This SFSP, along with the necessary companion documents, has been designed to provide the regulatory agencies with sufficient detail to reach a determination as to the adequacy of the scope of work.

Table 3-1

Summary of Data Quality Objectives
Former Motor Pool Area 2000, Parcel 144(7)
Fort McClellan, Calhoun County, Alabama

Potential Data Users	Available Data	Conceptual Site Model	Media of Concern	Data Uses and Objectives	Data Types	Analytical Level	Data Quantity
EPA ADEM USACE DOD IT Corporation Other Contractors Possible future land users	ESE, 1998	Contaminant Source Fueling activities <u>Migration Pathways</u> Groundwater infiltration, and surface water runoff <u>Potential Receptors</u> Youthful visitor, groundskeeper, off-site resident, construction worker, on-site resident <u>PSSC</u> Fuels, waste oils, metals	Surface Soils	SI to confirm the presence or absence of PSSC in the site media.	Surface soil TCL-VOCs TCL-SVOCs TAL-metals	Definitive + CESAS Level B package	7 direct-push locations + QC
			Subsurface Soils				
			Groundwater	Definitive quality data for future decision making	<u>Subsurface Soil</u> TCL-VOCs TCL-SVOCs TAL-metals	Definitive + CESAS Level B package	7 direct-push locations + QC
			Sediment				
			Surface Water		Groundwater TCL-VOCs TCL-SVOCs TAL-metals	Definitive + CESAS Level B package	7 direct-push locations + QC
			Depositional Soil		Sediment TCL-VOCs TCL-SVOCs TAL-metals TOC, grain size	Definitive + CESAS Level B package	2 locations + QC
					<u>Surface Water</u> TCL-VOCs TCL-SVOCs TAL-metals	Definitive + CESAS Level B package	2 locations + QC
					<u>Depositional Soil</u> TCL-VOCs TCL-SVOCs TAL Metals	Definitive + CESAS Level B package	2 locations + QC

ADEM - Alabama Department of Environmental Management.
CESAS - Corps of Engineers South Atlantic Savannah.
DOD - U.S. Department of Defense.
EPA - U.S. Environmental Protection Agency.
ESE - Environmental Science and Engineering, Inc.
PSSC - Potential site-specific chemical.

QC - Quality control.
SVOC - Semivolatile organic compound.
TAL - Target analyte list.
TCL - Target compound list.
USACE - U.S. Army Corps of Engineers.
VOC - Volatile organic compound.

3.3 Conceptual Site Exposure Model

The CSEM provides the basis for identifying and evaluating the potential risks to human health in the risk assessment. Graphically presenting all possible pathways by which a potential receptor may be exposed, including all sources, release and transport pathways, and exposure routes, facilitates consistent and comprehensive evaluation of risk to human health, and helps to ensure that potential pathways are not overlooked. The elements necessary to construct a complete exposure pathway and develop the CSEM include:

- Contaminant source (contaminated environmental) media
- Contaminant release mechanisms
- Contaminant transport pathways
- Exposure pathways
- Potential receptors.

Contaminant release mechanisms and transport pathways are not relevant for direct receptor contact with a contaminated source medium.

Potential contamination at Parcels 137 and 144 is due to its past use as Motor Pool Area 2000 and a gasoline station. A wash rack, oil/water separator (OWS), and two USTs were thought to be present on the site, but the site has been paved over and no evidence of these objects was identified during the site walkover. The area surrounding the site is mostly residential and recreational. The South Branch of Cane Creek is located west of the site and a small drainage creek is located to the south of the site. The site is currently used as a go-cart track.

It is assumed that releases of any potential contaminants from this site are restricted to subsurface soil (leakage from the USTs) and the exposed surface soil (unpaved areas). Potential contaminant transport pathways include runoff from the paved surface and on-site exposed surface soil into the small off-site drainage creek and the South Branch of Cane Creek, infiltration and leaching from subsurface soil to groundwater, discharge of groundwater to the surface, and dust emissions and volatilization from surface water and soil to ambient air.

Current site use is best described as recreational. Plausible receptors under current site use are the groundskeeper, youthful visitor, construction worker, and off-site resident. Other receptors considered but not included under current site uses are:

- On-site resident: The site is not used as a residential development.

- Sportsman: The site is largely paved and does not offer opportunities for hunting or fishing.

The Preferred Land Use Plan specifies active recreation for all parcels within Reuse Parcel 6 (FTMC, 1997). For the future site use scenario, plausible receptors again include the youthful visitor, groundskeeper, off-site resident and construction worker. An on-site resident is also a possibility if future plans determine a need for additional housing. The sportsman is not included under the future recreational scenario for the reasons described above. The contaminant release and transport mechanisms, source exposure media, receptors, and exposure pathways are summarized in Figure 3-1.

Assessment of potential ecological risk associated with sites or parcels (e.g., surface water and sediment sampling, specific ecological assessment methods, etc.) will be addressed in a separate document to be issued as the Habitat-Specific Screening Ecological Risk Assessment Work Plan.

3.4 Decision-Making Process, Data Uses, and Needs

The decision-making process consists of a seven-step process that is presented in detail in Sections 3.2 and 4.3 of the WP and will be followed during the SI at the Former Motor Pool Area 2000. Data uses and needs are summarized in Table 3-1.

3.4.1 Risk Evaluation

Confirmation of contamination at the Former Motor Pool Area 2000 will be based upon a comparison of detected site contaminants to the most current guidance criteria. The data will be reported and evaluated using definitive data with CESAS Level B criteria. Data packages will contain reporting limits sufficient to determine whether the established guidance criteria are exceeded in site media. Definitive data will be adequate for confirming the presence of site contamination and for supporting additional decision-making steps, such as remedial action and risk assessment, if necessary. Alternatively, in the absence of contamination, the definitive data will be adequate to recommend no further action and site closure.

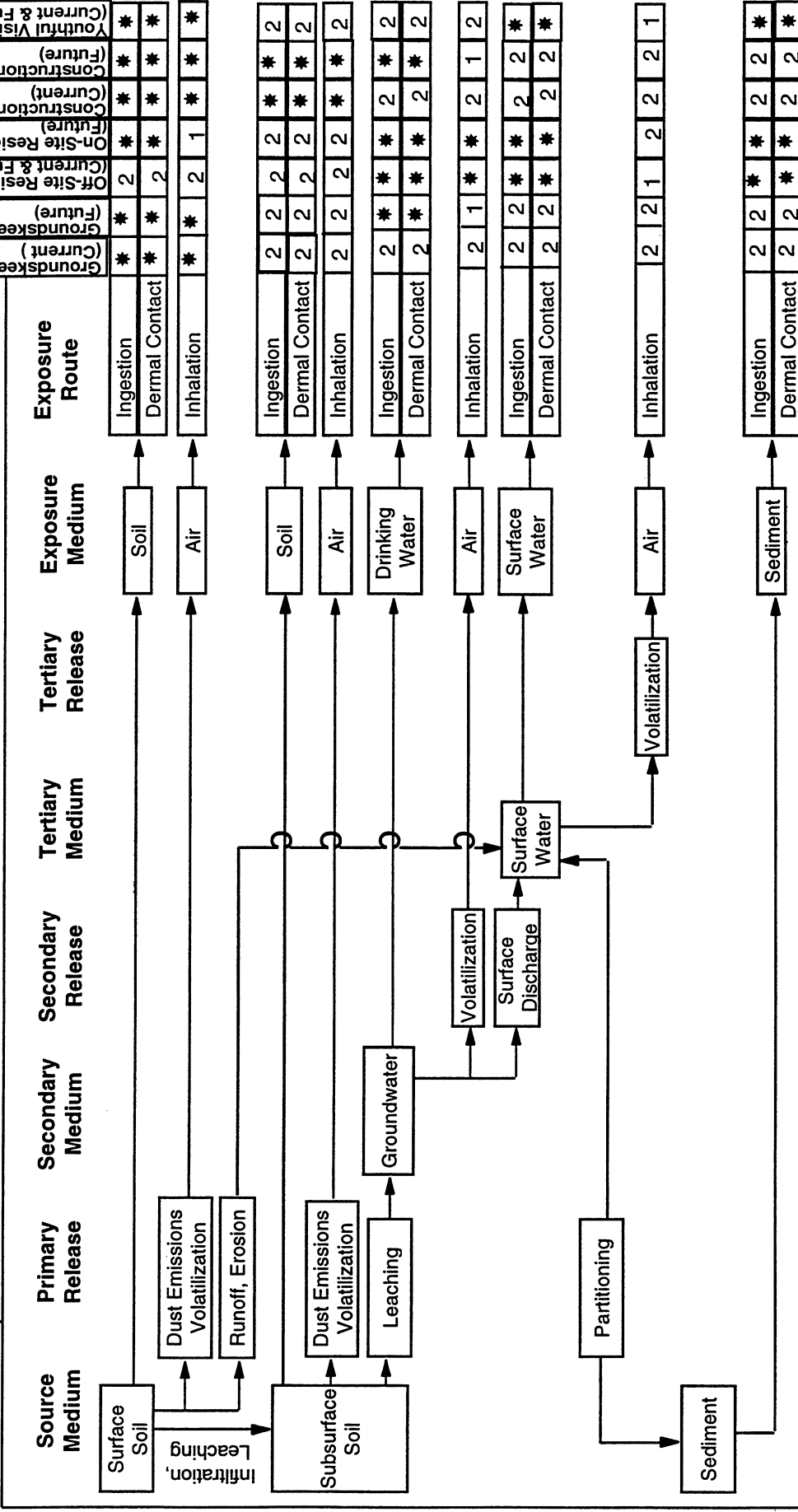
3.4.2 Data Types and Quality

Soil, groundwater, surface water, and sediment will be sampled and analyzed to meet the objectives of the SI at the Former Motor Pool Area 2000. Quality assurance/quality control (QA/QC) samples will be collected for all sample types as described in Chapter 4.0 of this SFSP. All samples will be analyzed by EPA-approved SW-846 methods, where available; comply with EPA definitive data requirements; and be reported using hard copy data packages. In addition to

Figure 3-1

**Former Motor Pool Area 2000 and Former Gas Station Area (Parcels 137 and 144),
Human Health Conceptual Site Exposure Model**

Fort McClellan, Alabama



* = Complete exposure pathway evaluated in baseline risk assessment
 1 = Although theoretically complete, this pathway is judged to be insignificant.
 2 = Incomplete exposure pathway.

meeting the quality needs of the SI, data analyzed at this level of quality are appropriate for all phases of site characterization, remedial investigation, and risk assessment.

3.4.3 Precision, Accuracy, and Completeness

Laboratory requirements of precision, accuracy, and completeness for this SI are provided in Chapter 9.0 of the QAP.

4.0 Field Activities

4.1 Utility Clearances

Prior to performing any intrusive sampling, a utility clearance will be performed at all locations where soil borings or monitoring wells will be installed and samples will be collected, using the procedure as specified in Section 4.2.6 of the SAP. The site manager will mark the proposed locations with stakes, coordinate with the FTMC personnel to clear the proposed locations for utilities, and obtain dig permits. Once the locations are cleared, the stakes will be labeled as cleared.

4.2 Surface Geophysical Survey

Parcel 137(7) contained two 10,000-gallon USTs; however, the exact location of the former UST could not be confirmed during either the EBS (ESE, 1998) or the IT visit in April 1998. Therefore, a geophysical survey will be conducted at Parcel 137(7) to locate the former USTs in order to locate the proposed sample locations within the proper area of concern.

Geophysical survey techniques offer the best approach to locating and mapping any potential USTs or their previous locations and any associated underground piping at sites containing significant surface cultural interference. A surface geophysical survey using magnetics, time- and frequency-domain EM induction, and GPR techniques will be conducted over the Former Motor Pool Area 2000, Parcels 144(7) and 137(7) to locate and delineate any possible unknown USTs, wash rack, OWS, or any other anomalies at the site. Two USTs were reported located near Former Building 2094 which does not presently exist at the site. The Building 2094 foundation has not been identified, and no evidence of the Building 2094 foundation was observed during VSIs conducted in April 1998 by IT personnel. There is no record of the location of the two 10,000 gallon USTs, wash rack, and OWS reportedly installed in 1941 at the site. Evidence of the USTs, OWS, or wash rack was not observed during the EBS. There are no pipelines or sanitary sewer lines recorded near the site (ESE, 1998).

These geophysical surveys are intended to locate where the two USTs, wash rack, and OWS currently exist or did not exist. If the surveys do not confirm the presence of the USTs, wash rack, and OWS it will be assumed that they do not exist.

4.2.1 Methodology and Instrumentation

The magnetic surveys will be conducted using a Geometric G-858G magnetic gradiometer (for collecting survey data) and a Geometrics G-856AX magnetometer or equivalent (for collecting base station data). The time-domain EM surveys will be conducted using a Geonics EM61 high-resolution metal detector coupled to an Omnidata DL720 digital data logger. Frequency-domain EM surveys will be conducted using a Geonics EM31 and EM34-3XL terrain conductivity meter, each coupled to an Omnidata DL720 digital data logger. Use of the G-858g, EM31, and EM61 is the preferred site reconnaissance method of detecting buried metal and tanks; however, these methods are not conclusive in differentiating tanks from pits or trenches containing metal debris, or identifying tanks in areas of significant cultural interference (e.g., structures, fences, reinforced concrete). GPR will be used to resolve EM and magnetic anomalies caused by tanks from those caused by other buried sources. The EM34-3XL surveys will be conducted based on site-specific conditions in which deep burial of target materials is suspected. The GPR survey will be conducted using a Geophysical Survey Systems Inc. System-2P or equivalent, coupled to either 200- or 400-megahertz antennas, depending on site conditions and signal attenuation. If required, a Metrotech 9860-NRL EM utility locator or equivalent, will be used confirm the presence or absence of metallic subsurface utilities, which may be evident as linear anomalies in the EM31 or EM61 contour maps.

Geophysical survey procedures to be used to conduct the investigation, including survey control, equipment calibration, field base station and data validation, data processing and interpretation, and file tracking procedures, will be in accordance with the methods and procedures outlined in Chapter 4.0 of the SAP and the following IT standard operating procedures for geophysical investigations:

- ITGP-001; Surface Magnetic Surveys
- ITGP-002; Surface Frequency-Domain EM Surveys
- ITGP-003; GPR Surveys
- ITGP-004; Surface Time-Domain EM Surveys
- ITGP-005; Global Positioning System (GPS) Surveys.

The following tasks will be performed prior to conducting the survey:

- Review existing site surface and subsurface information (e.g., aerial photographs, utility maps, boring logs, etc.).

- Evaluate the potential influence of cultural features (e.g., overhead and subsurface utilities, fences, buildings, etc.).
- Conduct a visual inspection of the sites to verify the likely locations of the target USTs.
- Conduct reconnaissance scans across the general area of the sites with the magnetic and/or EM instruments to determine whether geophysical anomalies exist within the proposed survey areas and/or near the proposed boundaries. The geophysical survey area boundaries for each site will be chosen in the field based on these results.

Following visual inspection of the sites and evaluation of reconnaissance scans with the instruments, base grids will be staked throughout each site such that the resolution objectives of the investigation are achieved (typically 50- to 100-foot centers). The base grids will be established using either a GPS or conventional civil surveying techniques. The geophysics base grids will be referenced to the Alabama State Plane Coordinate System. Using the base grids as a reference, the geophysics crew will mark control points on 20-foot centers throughout each site with surveyor's paint and/or plastic pinflags. To the extent possible, the grids will be oriented in the north to south (N-S) direction. If vegetation or surface metal is present, it shall be removed where necessary prior to collecting geophysical data.

After the survey grids are complete and control points are marked, all surface objects that could potentially affect the geophysical data (e.g., surface metal, variations in topography, overhead utilities, etc.) will be mapped using the GPS so that anomalies caused by these objects can be correctly interpreted.

Geophysical data processing will be completed in the field following the survey. The EM and magnetic data will be presented as color-enhanced contour maps to facilitate recognition of subtle anomalies. All geophysical anomalies will be field-checked to verify their source as either surface culture or subsurface objects/debris. Surface source materials responsible for the observed geophysical anomalies will be documented on the contour maps. Anomalies caused by subsurface source materials the size of a UST will be marked in the field for further characterization with GPR. GPR will be used to discriminate between anomalies caused by USTs and those potentially caused by pits containing significant metal debris.

The conclusions from the geophysical survey at each site will be incorporated into the SI report to be prepared for the Wad No.1 sites. Additionally, a geophysics report for Parcels 144(7) and 137(7) will be provided as an appendix to the SI report.

4.2.2 Aerial Coverage

The Former Motor Pool Area 2000 Site geophysical surveys will encompass an area of approximately 4 acres. The shaded area on Figure 4-1 indicates the area that will be covered by the geophysical survey. The following is a list of steps that may be performed at the site:

- G-858G magnetic gradiometer data will be collected at 0.5-second intervals (approximate 2.0- to 2.5-foot intervals) along N-S oriented survey lines spaced 10 feet apart for a total of 16,690 linear feet of survey coverage.
- EM31 survey data will be collected at 5-foot intervals along N-S and east to west (E-W) oriented survey lines spaced 10 feet apart for total a of 33,380 linear feet of survey coverage.
- EM34-3XL survey data will be collected, if necessary, using the 10- and 20-meter intercoil spacing configuration. Data will be collected in the vertical and horizontal dipole orientations at 2.5-meter intervals along N-S oriented survey lines spaced 2.5 meters apart.
- EM61 survey data will be collected at approximate 2-foot intervals along N-S and E-W oriented survey lines spaced 10 feet apart for a total of 31,200 linear feet of survey coverage.
- GPR profile data will be collected to further characterize anomalies potentially representing the UST's seen in the magnetic and/or EM data. The orientation and length of the GPR lines will be chosen in the field to yield the most usable results. It is estimated a total of 2,600 linear feet of GPR profile data will be collected at the sites.
- In areas of the site where linear EM31 or EM61 anomalies potentially representing pipelines/utilities are observed in the contoured data, the lines will be verified with the Metrotech 9860-NRL EM utility locator. Verification is necessary since the anomalous response caused by subsurface utilities may sometimes be mistaken for large buried metal objects. The locations of interpreted pipelines will be marked in the field with surveyor's paint and placed on the site map.

Due to the limited information as to the location of the two USTs, wash rack, and OWS, the most efficient reconnaissance process will be to address the complete site with the geophysical surveys instead of targeting any specific part of the site.

Note: The geophysical survey of this site was completed in August 1998. The data was reviewed, evaluated, and is discussed in Section 4.2.3.

4.2.3 Underground Storage Tank Exploratory Test Pits

The geophysical survey identified an anomalous area or potential UST along the eastern portion of the site. An exploratory test pit will be excavated to confirm or deny the presence of a UST. The UST exploratory test pit will be excavated using a backhoe equipped with a 3-foot-wide bucket. If the presence of a UST is confirmed, the UST will not be removed. The excavated soil will be returned to the test pit and the location marked with a stake. The location of the UST along with any observations will be recorded in the field log.

If found, the type and location of materials other than a UST will be noted in the field log. The excavated material will be placed back in the test pit and the location marked with a stake. If nothing is found in the excavation, the test pit will be backfilled with the excavated material. The label “potential tank” will be removed from the location of the geophysical anomaly.

4.3 Environmental Sampling

The environmental sampling program during the SI at the Former Motor Pool Area 2000 site includes the collection of surface and subsurface soil, groundwater, surface water, sediment, and depositional soil samples for chemical analysis.

Results of the geophysical survey conducted at the Former Motor Pool Area 2000 site were used to locate proposed sample locations. Two surface soil samples, two subsurface soil samples, and two groundwater samples will be collected downgradient of the suspected UST.

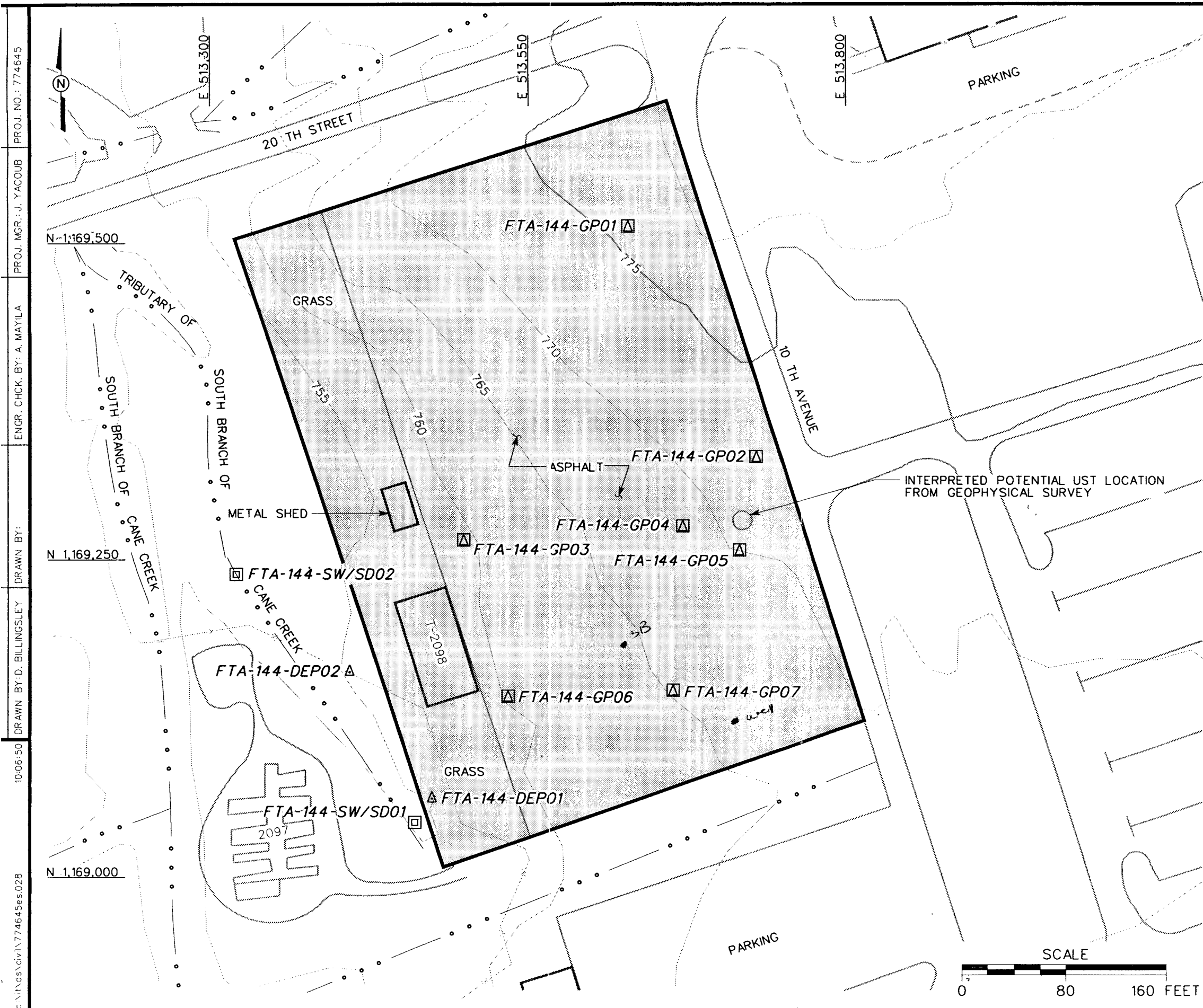
Proposed sample locations are presented on Figure 4-1.

4.3.1 Surface Soil Sampling

Surface soil samples will be collected at the locations described in Table 4-1 and presented on Figure 4-1. Seven surface soil samples will be collected to determine if PSSC are present.

4.3.1.1 Sample Locations and Rationale

The surface soil sampling rationale is presented in Table 4-1. A total of seven surface soil samples will be collected from the Former Motor Pool Area 2000. Surface soil samples will be collected from the upper 1 foot of soil at each sampling location. The proposed surface soil sampling locations are presented on Figure 4-1



LEGEND

- UNIMPROVED ROADS AND PARKING
- PAVED ROADS AND PARKING
- BUILDING
- TOPOGRAPHIC CONTOURS
- PARCEL BOUNDARY
- CULVERT WITH HEADWALL
- SURFACE DRAINAGE / CREEK
- FENCE
- PROPOSED SURFACE WATER/SEDIMENT SAMPLE
- PROPOSED GROUNDWATER, SURFACE AND SUBSURFACE SOIL SAMPLE
- PROPOSED DEPOSITIONAL SOIL SAMPLE

NOTES

1. ALL SAMPLING LOCATIONS ARE APPROXIMATE LOCATIONS.
2. POTENTIAL UST LOCATION MARKED IN THE FIELD.
3. SITE FEATURES FOUND ON THIS MAP ARE UNCHECKED; FOR ACCURATE SITE INFORMATION TO RECONSTRUCT UST LOCATION, USE GEOPHYSICS SITE MAP.

FIGURE 4-1
PROPOSED SOIL, GROUNDWATER, SURFACE WATER, AND SEDIMENT SAMPLING LOCATIONS
FORMER MOTOR POOL AREA 2000 PARCELS 137(7) AND 144(7)

U. S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT
FORT McCLELLAN
CALHOUN COUNTY, ALABAMA
Contract No. DACA21-96-D-0018



PROJ. NO.: 774645
PROJ. MGR.: J. YACOUB
ENGR. CHK. BY: A. MAYILA
DRAWN BY: D. BILLINGSLEY
10:06:50
c:\nt\ngs\civil\774645\es028

Table 4-1

**Site Sampling Rationale
Former Motor Pool Area 2000, Parcel 144(7)
Fort McClellan, Calhoun County, Alabama**

Sample Location	Sample Media	Sampling Location Rationale
FTA-144-GP01	SURFACE SOIL SUBSURFACE SOIL GROUNDWATER	Upgradient sampling location in the northwest corner of site to confirm or deny the absence or presence of contaminants. Upgradient sample location to determine if potential contaminants are from the site or upgradient of the site.
FTA-144-GP02	SURFACE SOIL SUBSURFACE SOIL GROUNDWATER	Sample location upgradient of the potential UST location identified using surface geophysical techniques.
FTA-144-GP03	SURFACE SOIL SUBSURFACE SOIL GROUNDWATER	Sample location in the vicinity of potential contaminant source or downgradient of potential contaminant source area based on historic land use at the motor pool.
FTA-144-GP04	SURFACE SOIL SUBSURFACE SOIL GROUNDWATER	Sample location downgradient of the potential UST location identified using surface geophysical techniques.
FTA-144-GP05	SURFACE SOIL SUBSURFACE SOIL GROUNDWATER	Sample location downgradient of the potential UST location identified using surface geophysical techniques.
FTA-144-GP06	SURFACE SOIL SUBSURFACE SOIL GROUNDWATER	Sample location located approximately 200 feet downgradient of the potential UST. Downgradient sample location for potential contaminant migration from the potential source area (UST).
FTA-144-GP07	SURFACE SOIL SUBSURFACE SOIL GROUNDWATER	Sample location located approximately 150 feet downgradient of the potential UST. Downgradient sample location for potential contaminant migration from the potential source area (UST).
FTA-144-SW/SD01	SURFACE WATER	Sample location is a potential, downgradient sink for contaminants from the site in question. Evidence of contaminant mobility at any point within the site would likely be integrated at this location.
FTA-144-SW/SD01	SEDIMENT	Sample location is a potential, downgradient sink for contaminants from the site in question. Evidence of contaminant mobility at any point within the site would likely be integrated at this location.
FTA-144-SW/SD02	SURFACE WATER	Sample location is a potential, downgradient sink for contaminants from the site in question. Evidence of contaminant mobility at any point within the site would likely be integrated at this location.
A37-144-SW/SD02	SEDIMENT	Sample location is a potential, downgradient sink for contaminants from the site in question. Evidence of contaminant mobility at any point within the site would likely be integrated at this location.
FTA-144-DEP01	DEPOSITIONAL SOIL	Sampling location represents a lower elevation area where surface water runoff could collect, and potentially percolate into the substratum, or potentially deposit dissolved materials after evaporation.
FTA-144-DEP02	DEPOSITIONAL SOIL	Sampling location represents a lower elevation area where surface water runoff could collect, and potentially percolate into the substratum, or potentially deposit dissolved materials after evaporation.

4.3.1.2 Sample Collection

Surface soil sample designations, depths, and required QA/QC sample quantities, are listed in Table 4-2. Seven surface soil samples will be collected using direct-push methodology specified in Section 4.9.1.1 of the SAP. Sample documentation and chain of custody will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1 of the QAP. The samples will be analyzed for the parameters listed in Section 4.6 of this SFSP.

4.3.2 Subsurface Soil Sampling

Subsurface soil samples will be collected from the same locations as the surface soil samples described in Section 4.3.1. Seven subsurface soil samples will be collected to determine if PSSC are present.

4.3.2.1 Sample Locations and Rationale

The subsurface soil sampling rationale is presented in Table 4-1. A total of seven subsurface soil samples will be collected using direct-push methodology and associated sampling equipment. The proposed subsurface soil sample locations are presented on Figure 4-1.

4.3.2.2 Sample Collection

Subsurface soil samples will be collected during the advancement of direct-push rods using the methodology specified in Sections 4.7.1.1 of the SAP.

Subsurface soil samples will be continuously collected from land surface to 12 feet below ground surface or until either refusal or groundwater is encountered. The entire length of the soil sample will be field screened using a photoionization detector (PID). Samples will be collected for headspace screening as specified in Section 4.15 of the SAP. The soil sample interval exhibiting the highest PID reading will be submitted to the laboratory for analysis. If groundwater is not encountered and there are not any PID readings detected above background (ambient air reading recorded on the PID after proper calibration and prior to commencing field operations), then the deposit sample interval will be selected for laboratory analyses.

Two borings will be installed downgradient of a potential UST. In these borings, the samples collected from the elevation immediately below the potential UST will be selected for chemical analysis. These sample intervals are proposed and tentative. The final sample intervals will be selected by the on-site geologist. The on-site geologist will base his/her decisions of field

Table 4-2

Surface Soil and Subsurface Soil Sample Designations and QA/QC Sample Quantities
Former Motor Pool Area 2000, Parcel 144(7)
Fort McClellan, Calhoun County, Alabama

Sample Location	Sample Designation	Sample Depth	QA/QC Samples			MS/MSD	Analytical Suite
			Field Duplicates	Field Splits			
FTA-144-GP01	FTA-144-GP01-SS-AE0001-REG	0-1 ft					TCL VOCs, TCL SVOCs, and TAL Metals
FTA-144-GP01	FTA-144-GP01-DS-AE0002-REG	a					TCL VOCs, TCL SVOCs, and TAL Metals
FTA-144-GP02	FTA-144-GP02-SS-AE0003-REG	0-1 ft					TCL VOCs, TCL SVOCs, and TAL Metals
FTA-144-GP02	FTA-144-GP02-DS-AE0004-REG	a					TCL VOCs, TCL SVOCs, and TAL Metals
FTA-144-GP03	FTA-144-GP03-SS-AE0005-REG	0-1 ft					TCL VOCs, TCL SVOCs, and TAL Metals
FTA-144-GP03	FTA-144-GP03-DS-AE0006-REG	a					TCL VOCs, TCL SVOCs, and TAL Metals
FTA-144-GP04	FTA-144-GP04-SS-AE0007-REG	0-1 ft					TCL VOCs, TCL SVOCs, and TAL Metals
FTA-144-GP04	FTA-144-GP04-DS-AE0008-REG	a,b					TCL VOCs, TCL SVOCs, and TAL Metals
FTA-144-GP05	FTA-144-GP05-SS-AE0009-REG	0-1 ft					TCL VOCs, TCL SVOCs, and TAL Metals
FTA-144-GP05	FTA-144-GP05-DS-AE0010-REG	a,b					TCL VOCs, TCL SVOCs, and TAL Metals
FTA-144-GP06	FTA-144-GP06-SS-AE0011-REG	0-1 ft					TCL VOCs, TCL SVOCs, and TAL Metals
FTA-144-GP06	FTA-144-GP06-DS-AE0012-REG	a					TCL VOCs, TCL SVOCs, and TAL Metals
FTA-144-GP07	FTA-144-GP07-SS-AE0013-REG	0-1 ft	FTA-144-GP07-SS-AE0014-FD	FTA-144-GP07-SS-AE0015-FS	FTA-144-GP07-SS-AE0013-MS	FTA-144-GP07-SS-AE0013-MSD	TCL VOCs, TCL SVOCs, and TAL Metals
FTA-144-GP07	FTA-144-GP07-DS-AE0016-REG	a					TCL VOCs, TCL SVOCs, and TAL Metals

^aSubsurface soil sample depths are approximate. The subsurface soil sample which exhibits the highest organic vapor reading on a photoionization detector (PID) will be submitted to the laboratory for chemical analysis. If none of the samples indicate PID readings above background, the deepest interval in each boring will be submitted for laboratory analyses.

^bSample to be collected at interval immediately below the bottom of potential underground storage tank.

MS/MSD - Matrix spike/matrix spike duplicate.

QA/QC - Quality assurance/quality control.

SVOC - Semivolatile organic compound.

REG - Field sample.

FD - Field duplicate.

FS - Field split.

TAL - Target analyte list.

TCL - Target compound list.

VOC - Volatile organic compound.

screening, soil staining, and depth to water. Subsurface soil sample designations, depths, and required QA/QC sample quantities are listed in Table 4-2.

Sample containers, sample volumes, preservatives, and holding times for the analyses required in the SFSP are listed in Section 5.0, Table 5-1 of the QAP. The samples will be analyzed for the parameters listed in Section 4.6 of this SFSP.

4.3.3 Groundwater Sampling

Groundwater samples will be collected using direct-push methodology and associated sampling equipment. Groundwater samples will be collected from the same locations as the surface and subsurface soil samples described in Sections 4.3.1 and 4.3.2.1.

4.3.3.1 Sample Locations and Rationale

Groundwater sampling rationale is presented in Table 4-1. Seven groundwater samples will be collected using direct-push technology. The proposed groundwater sampling locations are presented on Figure 4-1.

4.3.3.2 Sample Collection

Direct-push groundwater samples will be collected from the same locations as the soil samples (Figure 4-1). Sample collection and decontamination procedures will be performed as outlined in Section 4.7.1.1 of the SAP. The groundwater sample designations, depths, and required QA/QC sample quantities, are listed in Table 4-3. Groundwater samples will be collected with the procedures and methods specified in Section 4.7.1.1 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Chapter 5.0, Table 5-1 of the QAP. The samples will be analyzed for the parameters listed in Section 4.6 of this SFSP.

4.3.4 Surface Water Sampling

4.3.4.1 Sample Locations and Rationale

Surface water sampling rationale is presented in Table 4-1. Two surface water samples will be collected from the tributary of the South Branch of Cane Creek, located directly west of the Former Motor Pool Area 2000. Figure 4-1 shows the proposed surface water sample locations.

Table 4-3

**Direct-Push Groundwater Sample
Designations and QA/QC Sample Quantities
Former Motor Pool Area 2000, Parcel 144(7)
Fort McClellan, Calhoun County, Alabama**

Sample Location	Sample Designation	QA/QC Samples			Analytical Suite
		Field Duplicates	Field Splits	MS/MSD	
FTA-144-GP01	FTA-144-GP01-GW-AE3001-REG				TCL VOCs, TCL SVOCs, and TAL Metals
FTA-144-GP02	FTA-144-GP02-GW-AE3002-REG				TCL VOCs, TCL SVOCs, and TAL Metals
FTA-144-GP03	FTA-144-GP03-GW-AE3003-REG				TCL VOCs, TCL SVOCs, and TAL Metals
FTA-144-GP04	FTA-144-GP04-GW-AE3004-REG				TCL VOCs, TCL SVOCs, and TAL Metals
FTA-144-GP05	FTA-144-GP05-GW-AE3005-REG				TCL VOCs, TCL SVOCs, and TAL Metals
FTA-144-GP06	FTA-144-GP06-GW-AE3006-REG				TCL VOCs, TCL SVOCs, and TAL Metals
FTA-144-GP07	FTA-144-GP07-GW-AE3007-REG	FTA-144-GP07-GW-AE3008-FD	FTA-144-GP07-GW-AE3009-FS	FTA-144-GP07-GW-AE3007-MS FTA-144-GP07-GW-AE3007-MSD	TCL VOCs, TCL SVOCs, and TAL Metals

MS/MSD - Matrix spike/matrix spike duplicate.

QA/QC - Quality assurance/quality control.

SVOC - Semivolatile organic compound.

REG - Field sample.

FD - Field duplicate.

FS - Field split.

TAL - Target analyte list.

TCL - Target compound list.

VOC - Volatile organic compound.

4.3.4.2 Sample Collection

Two surface water samples will be collected in areas where surface runoff is most likely to occur. In the event the tributary of the South Branch of Cane Creek is dry, surface water samples will be collected following a rain event. Surface water samples to be collected at the Former Motor Pool 2000 and their designated sample numbers, along with QA/QC sample quantities, are listed in Table 4-4.

4.3.5 Sediment Sampling

4.3.5.1 Sample Locations and Rationale

Sediment sample rationale is presented in Table 4-1. Two sediment samples will be collected from the tributary of the South Branch of Cane Creek, located directly west of the Former Motor Pool Area 2000. Proposed sediment sample locations are shown on Figure 4-1.

4.3.5.2 Sample Collection

Sediment samples will be collected in accordance with the procedures outlined in the SAP. Sediment samples to be collected at the Former Motor Pool Area 2000 and their designated sample numbers, along with QA/QC sample quantities, are listed in Table 4-4.

4.3.6 Depositional Soil Sampling

Two depositional soil samples will be collected from the Former Motor Pool Area 2000.

4.3.6.1 Sample Locations and Rationale

Two depositional soil samples will be collected in locations which represent a lower elevation area where surface runoff could collect, and potentially percolate into the substratum, or potentially deposit dissolved materials after percolation and/or evaporation. Figure 4-1 shows the proposed depositional soil locations.

4.3.6.2 Sample Collection

Depositional soil samples will be collected using direct-push methodology and associated sampling equipment in the same manner as the surface and subsurface soil samples to be collected during this effort. Table 4-4 presents the designated sample numbers, analytical parameters, and required QA/QC sample quantities.

Table 4-4

Surface Water and Sediment Sample Designations and QA/QC Sample Quantities
Former Motor Pool Area 2000, Parcel 144(7)
Fort McClellan, Calhoun County, Alabama

Sample Location	Sample Designation	QA/QC Samples			Analytical Suite
		Field Duplicates	Field Splits	MS/MSD	
FTA-144-SW/SD01	FTA-144-SW/SD01-SW-AE2001-REG				TCL VOCs, TCL SVOCs and TAL Metals
FTA-144-SW/SD01	FTA-144-SW/SD02-SD-AE1001-REG				TCL VOCs, TCL SVOCs, and TAL Metals, TOC, and Grain Size
FTA-144-SW/SD02	FTA-144-SW/SD01-SW-AE2002-REG				TCL VOCs, TCL SVOCs, and TAL Metals
FTA-144-SW/SD02	FTA-144-SW/SD02-SD-AE1002-REG				TCL VOCs, TCL SVOCs, and TAL Metals, TOC, and Grain Size
FTA-144-DEPO1	FTA-144-DEP01-DEP-AE1003-REG				TCL VOCs, TCL SVOCs, and TAL Metals
FTA-144-DEP02	FTA-144-DEP02-DEP-AE1004-REG	FTA-144-DEP02-DEP-AE1005-FD	FTA-144-DEP02-DEP-AE1006-FS		TCL VOCs, TCL SVOCs, and TAL Metals

MS/MSD - Matrix spike/matrix spike duplicate.

QA/QC - Quality assurance/quality control.

SVOC - Semivolatile organic compound.

TOC - Total Organic Carbon using EPA Method 9060.

TAL - Target analyte list.

TCL - Target compound list.

VOC - Volatile organic compound.

Grain Size using ASTM Method D421/D422.

4.4 Decontamination Requirements

Decontamination will be performed on sampling and nonsampling equipment primarily to ensure that contaminants are not introduced into samples from location to location. Decontamination of sampling equipment will be performed in accordance with the requirements presented in Section 4.10.1.1 of the SAP. Decontamination of nonsampling equipment will be performed in accordance with the requirements presented in Section 4.10.1.2 of the SAP.

4.5 Surveying of Sample Locations

Sampling locations will be marked with pin flags, stakes, and/or flagging and will be surveyed using either GPS or conventional civil survey techniques, as necessary to obtain the required level of accuracy. Horizontal coordinates will be referenced to the Alabama State Plane coordinate system, 1983 North American Datum (NAD83). Elevations will be referenced to the National Geodetic Vertical Datum of 1929 or the North American Vertical Datum of 1988 (soon to be established on site).

Horizontal coordinates for all soil, sediment, and surface water locations will be recorded using a GPS to provide accuracy within 1 meter. Because of the need to use temporary wells (micro-wells) to determine water levels, a higher level of accuracy is required. Temporary wells will be surveyed to an accuracy of 0.1 foot for both horizontal coordinates and 0.01 feet for elevations, using survey-grade GPS techniques and/or conventional civil survey techniques, as required. Permanent monitoring well locations will be surveyed by a registered professional land surveyor to provide the required accuracy of 0.1 foot for horizontal coordinates and 0.01 foot for elevations. Procedures to be used for GPS surveying are described in Section 4.3 of the SAP. Conventional land survey requirements are presented in Section 4.19 of the SAP.

4.6 Analytical Program

Samples collected at locations specified in Chapter 4.0 will be analyzed for various physical and chemical properties. The on-site sample coordinator will provide sampling containers and preservatives to the field sampling crews in accordance with Table 5-1 in the QAP. The specific suite of chemicals to be analyzed is based on the PSSC present based historically at the site and EPA, ADEM, FTMC, and USACE requirements. Target analyses for samples collected from the Former Motor Pool Area 2000 consist of the following list of parameters:

- TCL VOCs - Method 5035/8260B
- TCL SVOCs - Method 8270C
- TAL Metals - Method 6010B/7000

- Total Organic Carbon - Method 9060 (sediment only)
- Grain Size - American Society of Testing and Materials D421\D422 (sediment only).

The samples will be analyzed using EPA SW-846 methods, including Updated III methods where applicable, as presented in Table 4-5 in this SFSP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with CESAS Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP). The chemical data will be reported via hard copy data packages by the laboratory using CLP-like forms. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

4.7 Sample Preservation, Packaging, and Shipping

Sample preservation, packaging, and shipping will follow the procedures specified in Section 4.13.2 of the SAP. Completed analysis request/chain-of-custody records will be secured and included with each shipment of coolers:

Attn: Sample Receiving
 Quanterra Environmental Services
 5815 Middlebrook Pike
 Knoxville, Tennessee 37921
 Telephone: (423) 588-6401

QA split samples collected for the USACE Laboratory will be shipped to the following address:

Attn: Sample Receiving
 USACE South Atlantic Division Laboratory
 611 South Cobb Drive
 Marietta, GA 30060
 Telephone: (770) 919-5270

4.8 Investigation-Derived Waste Management

Management and disposal of the investigation-derived wastes (IDW) will follow procedures and requirements as described in Section 4.10 and Appendix D of the SAP. The IDW expected to be generated at FTMC will include decontamination fluids, purge water from temporary monitoring wells, and disposable personal protective equipment. The IDW will be staged inside the fenced area surrounding Buildings 335 and 336 while awaiting final disposal.

Table 4-5

Analytical Samples
Former Motor Pool Area 2000, Parcel 144(7)
Fort McClellan, Calhoun County, Alabama

Parameters	Analysis Method	Sample Matrix	TAT Needed	Field Samples			QA/QC Samples ^a					Total No. Analysis	QA Lab Total No. Analysis
				No. of Sample Points	No. of Events	No. of Field Samples	Field Dups (10%)	Splits w/ QA Lab (10%)	MS/MSD (5%)	Trip Blank (1/skip)	Eq. Rinse (1/wk/matrix)		
Former Motor Pool 2000 - Parcel 144 (7) and 137 (7): 7 groundwater, 2 surface water, 7 surface soil, 7 subsurface soil, 2 sediment, and 2 depositional soil													
TCL VOCs	8260B	water	normal	9	1	9	1	1	1	2	1	15	1
TCL SVOCs	8270C	water	normal	9	1	9	1	1	1	1	1	13	1
Tot TAL Metals	6010B/7000	water	normal	9	1	9	1	1	1	1	1	13	1
TCL VOCs	8260B	soil	normal	18	1	18	2	2	1	1	1	23	1
TCL SVOCs	8270C	soil	normal	18	1	18	2	2	1	1	1	23	1
Tot TAL Metals	6010B/7000	soil	normal	18	1	18	2	2	1	1	1	23	1
TOC	9060	sediment	normal	2	1	2						2	1
Grain Size ASTM	D421/D422	sediment	normal	2	1	2						2	1
Former Motor Pool 2000 Total:												114	8

^aField duplicate, QA split, and MS/MSD samples were calculated as a percentage of the field samples collected per site and were rounded up to the nearest whole number. Trip blank samples will be collected in association with water matrix samples for VOC analysis only. Assumed 4 field samples per day to estimate trip blanks. Equipment blanks will be collected once per event whenever sampling equipment is field decontaminated and re-used. They will be repeated weekly for sampling events that are anticipated to last more than 1 week. Assumed 20 field samples will be collected per week to estimate number of equipment blanks.

Ship samples to:	Quanterra Environmental Services 5815 Middlebrook Pike Knoxville, Tennessee 37921 Attn: John Reynolds Tel: 423-588-6401 Fax: 423-584-4315	USACE Laboratory split samples are shipped to:	USACE South Atlantic Division Laboratory Attn: Sample Receiving 611 South Cobb Drive Marietta, Georgia 30060-3112 Tel: 770-919-5270
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QA/QC - Quality assurance/quality control.
MS/MSD - Matrix spike/matrix spike duplicate.
VOC - Volatile organic compound
SVOC - Semivolatile organic compound.
TAL - Target analyte list.
TCL - Target compound list.
TOC - Total organic carbon.
ASTM - American Society of Testing and Materials.

5.0 Project Schedule

The project schedule for the SI activities will be provided by the IT project manager to the Base Closure Team on a monthly basis.

6.0 References

Environmental Science and Engineering Inc. (ESE), 1998, *Final Environmental Baseline Survey, Fort McClellan, Alabama*, prepared for U.S. Army Environmental Center, Aberdeen Proving Ground, Maryland, January.

Fort McClellan, 1997, *Fort McClellan Comprehensive Reuse Plan, Fort McClellan Reuse and Redevelopment Authority of Alabama, Implementation Strategy*, November.

IT Corporation (IT), 1998a, *Final Installation-Wide Sampling and Analysis Plan, Fort McClellan, Calhoun County, Alabama*, September.

IT Corporation (IT), 1998b, *Final Installation-Wide Work Plan, Fort McClellan, Calhoun County, Alabama*, September.

U.S. Army Corps of Engineers (USACE), 1998, *Site Investigations, Fort McClellan, Alabama, Scope of Work*, January.

U.S. Army Corps of Engineers (USACE), 1994, *Requirements for the Preparation of Sampling and Analysis Plans*, Engineer Manual EM 200-1-3, September 1.

U.S. Department of Agriculture, 1961, *Soil Survey, Calhoun County, Alabama*, USDA Soil Conservation Service in cooperation with Alabama Department of Agriculture and Industries, Alabama Agricultural Experiment Station, Series 1958, No. 9, September.

U.S. Environmental Protection Agency (EPA), 1993, *Data Quality Objectives Process for Superfund, Interim Final Guidance*, EPA 540-R-93-071, September.